Maryland Medical Care Data Base (MCDB)
Data Base Design Plan

Prepared for
The Maryland Health Care Commission
(MHCC)

September 30, 2008

Table of Contents

page

Introduction

The *Data Base Design Plan* addresses several Maryland Medical Care Data Base (MCDB) issues, including the processes to be used for development of the MCDB, data security, the schedule for development of the MCDB, and our approach to quality control for maintaining the MCDB. It is updated and delivered to the Maryland Health Care Commission (MHCC) annually.

SSS will produce a multi-faceted, accurate, and analytically rich database with components suited to be used for a variety of analytical tasks. As in previous years, the 2007 database will be comprised of three components: the Medical Services file, the Prescription Drug file, and the Medicare file. The Medical Services file is created based on the private-payer encounter data; the Prescription Drug file is created from the private-payer pharmacy data; and the Medicare file is a modified extract from the annual CMS Maryland Medicare Carrier claims file. We will also produce and deliver patient-level files created based on the encounter and prescription drug data bases. The data from these master files will be used in producing the ancillary data files which include the Medical Services analysis files and the Prescription Drug analysis files. Data from the aforementioned analysis files will be used for the SHEA report, the prescription drug use analysis, the Practitioner report analysis for presentation to MHCC, used by policymakers, and released to the general public.

SSS will perform a review of the data edit, imputation, and data enhancement strategies. The SSS project manager, health care system analysts, and data base managers have been examining areas needing adjustment and incorporating design elements to meet new analysis requirements. Special attention this year will be paid to enhance the existing edits, especially, to better identify and handle numerous data outliers. We will also use additional data sources to enhance the Medical Services and Prescription Drug data including the CMS Relative Value Unit (RVU) file, the BETOS Public Use file, the CMS Unique Physician Identification Number (UPIN) file, the National Drug Code (NDC), Multum Categories contained in the Multum NDC Lexicon, and the CDPS grouper software provided by MHCC.

SSS will conduct data base development activities in a structured sequence that will enable us to modify code easily to respond to payer-specific issues when needed. Figure 1 provides an overview of our MCDB data base development modules for Medical Services and Prescription Drug components, the main two components of the MCDB. Also, additional rounds of the new edits will be performed as soon as the data from the payers are combined.

All non-analytical-file components of the MCDB will be delivered to MHCC on or before January 15, 2009. Along with all SAS and Excel programs, MCDB documentation, MCDB User Manual and other technical documentation, this delivery will include the master data files—Medical Services (service and patient levels), Prescription Drug (drug and patient levels), and Medicare. In addition, if MHCC desires, electronic copies of the documentation will be posted on the password-protected FTP site that SSS maintains for the exclusive use of MHCC. The established permissions to the site will allow only MHCC users to download posted files; SSS will retain exclusive viewing, modification, and uploading rights to maintain the site's integrity. The server on which the FTP site is located resides behind a firewall to restrict traffic to only the designated FTP port.

SSS will deliver all the MCDB files in the most current version of SAS on SDLT tapes. SSS currently has all the necessary hardware and software to meet these delivery requirements. If

needed, SSS programming staff will remain available to adjust any errors identified by MHCC within 90 days of delivery, and will provide corrected information within 10 days of notification by MHCC. Identical copies of the deliverables will be kept at SSS and SSS offsite storage.

SSS will provide MHCC with weekly reports on progress in the development of all component data sets if required and work with MHCC to resolve any potential problems in meeting deadlines.

Figure 1.Private-Payer Database Development Modules

Medical Services

Module 1
Flag Records (not delete) and Create Variables

- Apply Global Screen Flags to record (not delete)
- Encrypt Patient ID and create unique patient identifier code
- Assign BETOS category codes
- Assign Services to plan type (HMO-FFS/nonHMO/Capitated)
- Create variables such as age, CPT flag, etc.

Module 2
Assignment/Imputation RVUs

- Assign/imputed RVUs (total, work, practice expense, and malpractice)
- Calculate theoretical Medicare Payment Rate

Module 3
Enhance Provider Specialty Coding

- Use Provider Roster as source of specialty coding
- Link medical services to roster entries by:
  Payer/Provider ID/Federal Tax ID *or*
  Payer/Provider ID
- Flag type of Linkage
- Randomly assign specialty based on CPT codes and their proportion in the database
- Correct specialty assignment based on NPI

Module 4
Identify "Odd Service, Patient Demographics, and Adjust data as needed

- Identify and flag "Odd" Services which will be excluded from analysis
- Distribute demographic variables
- Assign patient's county of residence
- Adjust data based on payers' specific instructions
- Adjust data based on MHCC approved algorithm

Module 5
Combine Data and Create Deliverable Files

- Create master Medical Services file by combining edited individual payer files
- Apply additional edits and handle outliers
- Create master Analysis File
- Create patient-level Medical Services file
- Create codebooks for all three deliverable files

Prescription Drugs

Module 1
Combine individual payer files and apply screens

- Combine edited individual payer files
- Encrypt patient ID and create unique patient identifier code

Module 2
Debit/Credit Reconciliation

- Identify debit/credit pairs based on duplication of negative/ positive financials by Payer/Recipient/NDC/ Fill Date/ Prescription Drug Number

Module 3
Add Multum Lexicon Fields

- Add Multum Drug Category Fields
- Add generic/brand category fields
- Add drug approval date

Module 4
Linking Pharmacy to Encounter and Provider files

- Link prescription drugs services to roster entries by DEA Number or Provider ID/Federal Tax ID
- Add specialty code fields
- Link patient-level encounter file to Pharmacy by Patient identifiers
- Add encounter characteristics fields such as delivery system and coverage type
- Flag type of linkage

Module 5
Create other Analysis Fields

- Create fields needed for analysis file

Module 6
Create Deliverable Files

- Create master prescription drug file
- Create master prescription drug analysis file
- Create patient-level prescription drug file
- Create codebooks for the prescription drug file

1. 2007 Private-Payer Encounter File

This section presents an overview of our plans for development of the 2007 private-payer Medical Services files. Also being presented in this section are our plans for assigning provider specialty codes and a discussion on the RVU imputation methods.

1.1 Objective and Overview

The 2007 data for the Medical Services file are collected from 23 private Maryland insurance companies, as shown in Appendix A. The data are moved through software programs which examine the data, expose potential anomalies, and edit data if needed to create an accurate and uniform data base. The software has been reviewed and modified and will be further enhanced where needed during the data processing steps to meet changes in the file composition and analytical requirements and to bring forward edits and statistics that are keys for the currently developed SHEA analysis and future analysis for the Practitioner report. The payer-specific 2006/2007 Data Completeness Summary reports that provide the key information to MHCC and SSS analysts, will be generated at two different stages; first, at the data collection stage and, later, at the completion of the data editing stage. The first set of this year's Data Completeness Summary reports along with the number of records being flagged (not deleted) based on the original global screens criteria, the financial fields analysis will be delivered to MHCC in September 2008. Included in this September deliverable, are preliminary reports on number of users, services, RVUs and total payments.

SSS will enhance the methodology to assign and impute the provider specialty by using NPI taxonomy information. The approach is briefly described in Section 1.2 of this document.

SSS plans to keep the general structure of the Medical Services file, and the structure will be similar to the one in place for the files delivered to MHCC for the previous years for consistency and easy use in trend analyses. However, in a joint effort with analysts, SSS will review the structure of the file to identify data elements that might need to be added or deleted and new fields that might need to be constructed.

For reporting purposes, we will create a master Medical Analysis file simultaneously with the production of the master Medical Services file. Once the master Medical Services file and the master Medical Analysis file are created, we will proceed to the development of the patient-level Encounter file.

1.2 Enhancement of the Medical Services File

As part of the development of the Medical Services file, several files will be linked with the medical services data to add analytical variables. Flag variables will be designed and added to the data file. Below we describe the data base development activities that are performed to enhance the data base by adding/modifying the following fields:

- RVUs
- BETOS categories
- Flags for identifying "odd services"
- DX grouping
- Date of enrollment
- Date of disenrollment

RVUs. SSS will assign and impute the total, malpractice, physician expense, and work RVUs. RVUs are the major component for both, the SHEA and Practitioner report analyses. They are an integral part of the assessment of service and provider volume, as well as pricing and payment trends. To assign RVUs, SSS will continue the current methodology of using the 2007 National Physician Fee Schedule Relative Value file and the 2007 Clinical Diagnostic Laboratory Fee Schedule file (for clinical test RVUs) as the source of the resource-based RVUs included in the MCDB data set. These files are downloaded from the CMS Web site. SSS will use the information contained in these files to assign/impute both total RVUs and component RVUs (malpractice RVUs, physician expense RVUs, and work RVUs). Among other steps taken we will use the algorithm to assign RVUs that include routines to identify services that are actually technical components, ambulatory surgery components, or professional components, but are not identified as such by the payer-provided AMA modifiers. RVUs will be imputed for services without RVUs in the CMS file based on statistical summaries across the Medical Services file.

BETOS. SSS will obtain type of service codes from the 2008 BETOS public-use file. This file is downloaded from the CMS Web site. We will provide MHCC summary documentation on any changes in the BETOS coding system from the previous year. SSS will also review the BETOS categories to ensure completeness and accuracy of coding. We will continue to use our existing methodology to enhance the published listing with CPT codes identifying childhood immunizations. We will also continue our efforts to identify and correct errors in the BETOS system, such as the classification of automated laboratory tests.

"ODD Services." Some medical services included in the MCDB Medical Services master file and Medical Services analytical files do not meet the data quality control standards set for inclusion in the SHEA and Practitioner reports analysis, but need to be retained in the Medical Services file and Medical Services analytical file. When the MCDB is created, these "odd services" will be flagged for easy removal during creation of the analysis tables if needed. "Odd" services will be retained in all MCDB Medical Services and Medical Services analytical files, since analysts may wish to include those services in selected analysis for the SHEA and Practitioner reports.

DX Grouping. To group the diagnosis codes, SSS will continue to use the Chronic Illness and Disability Payment System (CDPS) grouper version 2.5, unless MHCC requests to apply a

different grouper. It is a classification system that is being used by some state Medicaid programs to make health-based capitation payments for persons with disability and Temporary Assistance for Needy Families (TANF) beneficiaries. It is a collection of SAS programs that create CDPS categories based on ICD-9-CM codes. The programs can also be used to calculate predicted CDPS case-mix scores, using data from Medicaid programs throughout the country which reflect health expenditure patterns among welfare beneficiaries and among persons with disability, CDPS grouper requires input fields based on Medicaid aid category:

AFDC/TANF Adults,
AFDC/TANF Children,
Disabled Adults, or
Disabled Children.

Aid category is required because CDPS assigns diagnoses to CDPS groups slightly differently by category of assistance (disabled vs. TANF) and by age group (children vs. adults). Further, the effects of diagnoses on expenditures are quite different for persons with disability than for TANF beneficiaries.

In order to use the CDPS grouper, we need to create two input data files (ELIGIBILITY and DIAGNOSES) using data from Encounter Analysis file. We will create these input files using the same definitions and programming steps that were designed last year.

- ELIGIBILITY file
  - Required variables:
    RECIPNO - Recipient ID (character, any length)
    AIDCAT - Aid category (numeric, defined as follows):
      1=AFDC/TANF Adult (ages: 18-64)
      2=AFDC/TANF Child (ages: 0-17)
      3=Disabled Adult (ages: 18-64)
      4=Disabled Child (ages: 0-17)
    AGE - Recipient age (numeric, not a grouped range)
    MALE - Recipient gender (numeric, defined as follows)
      MALE=1 (yes, male)
      MALE=0 (no, female)
    ELIG - Number of months of eligibility in the base year (numeric, a number between 1 and 12)
  - Note: Per E-mail (10-07-05) from Linda Bartnyska (MHCC):
    1) Set category of assistance = AFDC (1 & 2)
    2) Adults are persons between the ages of 18 and 64. Children are persons between the ages of 0 and 17.
    3) Set # months of eligibility to 12.
  - Keep one records per PIDBDG (renamed to RECIPNO)
  - If there are duplicate records by PIDBDG, AGE & SEX, use data from the first record.
  - Delete records with AGE less than zero
  - Delete records with missing sex.

- DIAGNOSES file
  - Required variables:
    RECIPNO -- Recipient identifier (characters or numbers)
    DIAG1 -- Character variable for diagnosis 1
    DIAG2 -- Character variable for diagnosis 2

Date of Enrollment. This data field indicates the start date of enrollment for the patient in a delivery system within this data submission time period. This field will be closely examined for validity and accuracy by SSS, along with other fields.

Date of Disenrollment. This data field indicates the end date of enrollment for the patient in a delivery system within this data submission time period. This field will be closely examined for validity and accuracy by SSS, along with all other fields.

1.3 Plans for Assignment of Provider Specialty

For 2007, SSS will continue using the same procedures implemented last year for assigning provider specialties for the medical service and pharmacy records. However, the methodology will be enhanced using National Provider Identifier (NPI) taxonomy information. Below is a brief description of the procedures.

1.3.1 Provider Specialty Information Sources

The sources for assigning specialty for the 2007 data are the payer-specific provider rosters, the National Provider Identifier (NPI) Registry, and the encounter claim records. For each provider, there is an encounter file containing at least one medical service. For this task, the items of interest on the encounter file are the Provider ID, the Federal Tax ID, and the procedure code (CPT code). The Provider Directory contains one record for each encounter service provider and contains the Provider ID, the Federal Tax ID, and up to three specialty codes. Each of these files contains a relatively small number of records with invalid data such as invalid Provider ID, Federal Tax ID, records without specialty, and records in encounter file without a Provider ID in the Provider Directory. Most of the processing steps are designed to handle these exceptions.

1.3.2 Encounter Specialty Code Assignment and Imputation

The first step in the process of specialty assignment/imputation is to transpose each record with three specialty codes to three records with a single specialty code. For example, if three specialty codes are reported, we will create three records (one for each of the reported specialty code) having all other variable with the same values. We will limit the output for this pre-processing to Provider ID, Federal Tax ID, and specialty code. Then, we will follow the three steps described below.

- **Pass One:** In this step, we will match the Encounter file to the Provider Directory; first by Provider ID and Federal Tax ID, and then by Provider ID only. In both cases, we will only keep the output if there is an encounter match to one non-miscellaneous specialty code. The following codes are considered miscellaneous: 034-surgical specialties not listed, 037-other specialties not listed, 038-physician without specialty identified, 062-other specialty, 085-all other supplies, and 093-other facility. In case the match yields a miscellaneous and non-miscellaneous specialty code, we will keep the non-miscellaneous specialty code. We will then compare the specialty code from the Provider ID and Federal Tax ID match to the Provider ID only match. If only one specialty code is returned, we will keep that one. If each match results in a specialty code , we will determine which one to keep in the following order:

- If one code is non-miscellaneous and one is miscellaneous, we will keep the non-miscellaneous.
- If both are non-miscellaneous, we will keep the one from the Provider ID and Federal Tax ID match.

The encounter records without specialty code assigned are processed in Pass Two.

- **Pass Two:** In case Pass One results in more than one non-miscellaneous specialty code, we will select the specialty code associated with the procedure code having the highest number of services. From the Pass One results, we will tabulate the frequency of specialty by procedure code (all providers combined together). Using this frequency, we will determine the specialty codes (in the case of multiple specialty codes match) by selecting the specialty that is assigned more frequently for the procedure code reported on the encounter file.

- **Pass Three:** For records without specialty code assignment in Pass One or Two, we will assign the specialty code based on the encounter procedure code. This is a hot-deck imputation process and the specialty codes are assigned (by procedure) in the same proportions of those assigned in Pass One. For example, in Pass One, if 40% of the encounters with procedure 3089 have a specialty of 040, then 40% of the records in Pass Three with procedure 3089 will be assigned a specialty of 040. In case there are encounters without similar procedures in Pass One, the specialty will be assigned proportionally regardless procedure code.

Starting with 2007 data submission, payers were requested to include the NPI number in their Provider Directory. We will use the NPI Registry file to assign a taxonomy code to each encounter record with a known provider NPI. For 2007, we expect that 25% of the records will have an NPI number. With the help of analysts, we will map the taxonomy codes to COMAR codes and use them to correct specialties assigned in the above three passes.

1.4 Medical Analysis File

For this year, SSS will develop a master Medical Analysis file which will contain all data elements from the master Medical Services file with the following records being excluded:

- Records with service begin date in 2008.
- Records with patient's age greater then 64.
- Records with missing patient's region of residence.
- Records with "Odd" service flags having value greater than 0.

Based on the new edits and identified data anomalies we will consider applying additional screens where needed or data recoding prior to performing analysis. Also, additional variables may be created per analyst's specification.

1.5 Patient-Level Encounter File

Since a variety of analyses for the report are performed on the patient–level, SSS will create a patient-level file as soon as the Encounter component of the MCDB is created. We will also make the delivery of the final patient-level file as one of the formal deliverables of the project.

The patient-level encounter file will be created by summarizing the data in the 2007 MCDB analysis file to one record per patient identification number (PIDBDG). SSS will check and resolve the instances where the same unique PIDBDG has more than one combinations of defining variable (such as coverage type, service plan and delivery system, etc.) before creating the patient-level encounter file. Data components that include number of services, payment amount, patient liability and RVUs will be aggregated (added) based on plan type. Payment amount, patient liability and RVUs will also be further categorized for the "participate" and "non-participate" data groups. In addition to the variables that will be directly extracted from the analysis data set, the following fields will be created as instructed by MHCC:

- F_EDSTAY: Flag, Patient has one or more ED visit
- F_FULLYEAR : Flag, Patient is full-year
- F_INSTAY: Flag, Patient has one or more inpatient visit
- F_OPDVISIT: Flag, Patient has one or more OPD visit
- F_RXLINK: Flag, Patient can be linked to the RX file

Appendix B-2 contains an alphabetic list of variables to be included in the patient-level encounter file.

2. 2007 Private Payer Prescription Drug File

This section presents an overview of our plan to develop the 2007 private-payer Prescription Drug data base, including creation of flags and analysis fields, examination of financial fields, examination of the links between pharmacy data and provider directories containing specialty information, examination of the link between pharmacy and encounter data, final data edits and record deletions, and documentation of errors and omissions.

2.1 Objective and Overview

The objective of the Pharmacy data base development is to produce a file that can be used by researchers to conduct quantitative studies on prescription drug utilization and pricing. The data base will be used to compute SHEA drug expenditures and perform prescription analysis. The data base development will address the needs of SHEA and also prescription drug analysis while emphasizing consistency in computation methodologies for these two areas of activities. To arrive to the data base development objective, a number of quality assurance mechanisms will be imbedded in the data processing software. During this process, SSS will create new analytical fields. As part of this process, we will examine the components of the NDC, evaluate the field data quality, and create drug classification fields. We will investigate the results of linking the Prescription Drug data to the provider directories by DEA Number and practitioner identifiers (Practitioner ID and Federal Tax ID), if the DEA Number is not available. We will also examine the results of the link between the Prescription Drug file to the Medical Services data by patient identifiers (Patient ID/ Date of Birth/Gender). Whenever appropriate, we will correct any fields that payers incorrectly coded per specific payer's instruction and will flag any record that does not meet criteria for inclusion. We will generate descriptive statistics for the reported fields to evaluate the quality of the submitted data. We will share information on the potential data problems with the payers by communicating data anomalies via phone, e-mail, fax, and in a form of the payer-specific Data Quality Review reports. This will help payers correct the data and provide MHCC with more complete and accurate data deliveries in the future data submission years. We will incorporate any critical analytical field that we cannot foresee at the time of the data base development design if needed.

Also, as for 2006 MCDB, we will create and deliver to MHCC patient-level data base based on the submitted drug level files.

2.2 Creation of Flags and Analysis Fields

In addition to the fields submitted by payers, SSS will create new variables to be used for analysis. These fields will be created with the MHCC's approval. The data base will need to be consistent with the data bases created in the previous years for easy access in the trend analysis. The Prescription Drug data will contain 67 fields. Twenty-four fields are included in the original data submissions and the remaining 43 fields will be created at SSS during data base development. Seven of the 24 fields will be added from the Provider and the Encounter files submitted by payers. The specialty fields will be added from the Provider file and the coverage type, delivery system, enrollment, and disenrollment fields will be added from the Encounter file. Although payers were asked by MHCC to submit encrypted patient IDs, since SSS is not able to verify the compliance, SSS will re-encrypt the Patient Identification (ID) field submitted by

payers to ensure confidentiality. Fields to be created for inclusion in the 2007 Pharmacy data base are listed in Appendix C-1.

2.2.1 National Drug Codes

The Nation Drug Code is one of the most important fields on the data base because it identifies the prescription drug filled for each record. Three components make up the configuration of an NDC. First, the labeler code, assigned by the Food and Drug Administration (FDA), identifies the firm that manufactures the drug. For example, the code for Bristol Myers Squibb is 00087. Second, the product code identifies a drug brand name. For example, the product code of Monopril tablets at Bristol Myers Squib is 0158. The last component is a package code to identify the different packages in which the drug is dispensed. The product and the package codes are assigned by each firm. SSS will create two fields derived from the NDC field. The first field is the Labeler-Product, which consists of the first 9 bytes of the NDC code. The second field is the package code, which consists of the last 2 bytes of the NDC code. Both fields will be created only for NDCs that could be identified using the Multum Lexicon Data Base.

2.2.2 Drug Classification

Prior to the 2002 Pharmacy data base, three fields (DC1, DC2, and DC3) were added to the data base. These fields contained the first three (of seven possible) FDA drug classification codes associated with the NDC code on each prescription service. Starting with 2002 Pharmacy data base, four new fields (MULTDC1, MULTDC2, MULTDC3, and MULTDC4) were added. These fields contain all four multum drug category codes associated with the NDC code on each prescription service. SSS will add the four fields to store the multum drug categories to the 2007 Pharmacy data base. The multum NDC data base includes a therapeutic chemical classification scheme that groups drugs according to the organ or the system on which they act and/or their therapeutic and chemical characteristics. There are 16 main categories and 285 subcategories. Some main categories are also broken down into intermediary categories. There are 30 intermediary categories. For example, amphotericins, azole antifungals, and miscellaneous antifungals are classified as antifungals, and antifungals are in turn classified as anti-infectives. Each NDC is classified under one or more drug categories. About 13 percent of all NDCs belong to more than one category. To illustrate, sodium bicarbonate (NDC 00002202902) belongs to three categories: (1) urinary pH modifiers, (2) minerals and electrolytes, and (3) antacids. Table 3 lists the 16 major drug categories.

Table 3. List of Multum Major Drug Categories

Category ID	Major Drug Category Name
1	Anti-Infectives
19	Antihyperlipidemic Agents
20	Antineoplastics
8	Biologicals
40	Cardiovascular Agents
57	Central Nervous System Agents
81	Coagulation Modifiers
87	Gastrointestinal Agents
97	Hormones
105	Miscellaneous Agents
115	Nutritional Products
122	Respiratory Agents
133	Topical Agents
218	Alternative Medicines
242	Psychotherapeutic Agents
254	Immunologic Agents

In addition to the Multum drug categories, SSS will also add a drug ID and a Main Multum Drug Code. The drug ID will enable database users to identify all drugs that share the same generic drug identifier as well as their clinically accurate name. The Main Multum Drug Code will enable database users to group drug products that share important common characteristics because each MMDC contains a unique combination of Drug ID, Principal Route Code, Dose Form Code, and Product Strength Code.

2.2.3 Delivery Systems and Coverage Type

Payers are required to provide delivery system and coverage type information on the Encounter data submissions. However, there is a need to identify the same information for prescription services recipients. For this purpose, SSS will add the two fields to the Prescription Drug data base: delivery systems and coverage type by linking the two data bases. After linking the Pharmacy and the Encounter files by the patient identifier described in the next section of the document, delivery system and coverage type values will be added to the Prescription Drug file. In the few cases when a patient has more than one delivery system or coverage type, SSS will use the most commonly occurring value.

2.2.4 Unique Patient Identifier

As stated above a special patient identifier will be created to link the Encounter file and the Pharmacy file. As before the special patient identifier will be created by concatenating one field created by SSS (Payer id) and the three fields submitted by payers (encrypted patient ID, birth

date containing the year and the month and gender). The final Prescription Drug file will be sorted by the special patient identifier.

2.2.5 Debit/Credit Flag

A number of payers have submitted data with negative financial fields, suggesting that these may be credit adjustments. However, there may be some payers who make adjustments but store them in their system as positive numbers. Without reliable bill type information, it is difficult to know if they are real adjustments or not. Whenever negative financials are provided, it is easy to identify full credit adjustments because one bill (positive) is cancelled by another bill (negative). Some payers also have records that are duplicated. A record is duplicated if more than one prescription (NDC) was filled the same day (fill date) for the same patient (patient ID-date of birth-gender). Starting in 2007, payers were requested to submit prescription drug number. For cases where debit and credit records have the same prescription drug number, we will use this field to create a debit/credit flag.

A debit/credit flag will be created to identify debit/credit problems. The flag for all records without duplicate fill (no similar prescription is filled the same day for the same patient) will be set to zero. The remaining records will go through three passes. In the first pass, if two bills for the same patient, the same NDC, and the same fill date have positive and negative payments canceling each other, the debit/credit flag will be set to 1. Using the remaining non-flagged records in the first pass, if two records are complete duplicates the flag will be set to 2 and if the records are partial duplicates, the flag is set to 3. In the last pass, all records without a flag in the second pass will have their debit/credit flag set to 4.

2.2.6 FDA Drug Approval Date and Brand/Generic Indicator

During the data base development, we will link the Pharmacy Data Base to the Multum Lexicon Data Base to capture drug approval date and brand/generic indicator. The drug approval date is the date when a specific drug was approved by the Food and Drug Administration (FDA). The brand/generic indicator designates which drug is branded and which one is generic. A brand name drug is produced and sold under the original manufacturer's brand name. A generic drug has exactly the same ingredients as a brand name drug but produced under a generic name. Generic drugs are produced after a brand name drug's patent has expired. A new flag (RF_NDRUG) will be created to differentiate between new and old brand drugs. New branded drugs are drugs approved in the last 4 years (2004-2007) and old branded drugs are the ones approved by FDA more than 4 years ago (before 2004).

2.2.7 Mail Order Drugs

The Pharmacy Data Base will include a flag (RF_MORDER) indicating prescription services dispensed from mail order pharmacy. Starting in 2003, major payers were asked to provide a list of mail-order pharmacies and their National Council for Prescription Drug Program (NCPDP) number. In 2007, this requirement was extended to all payers and was included in the 2007 Data Submission manual. We will use the list of mail order NCPDP to identify prescription services filled via mail order.

2.2.8 Analysis Flags

An analysis flag (RF_ANAL) will be created to identify records to be used in the analysis file. The analysis file will be used for the prescription drug use and expenditure analytical work. A number of criteria will be used to screen out records from the analysis file. For example, prescriptions not filled in the current year (2007) will be excluded from the analysis file. At any time, a user will be able to subset the analysis file from the full data base using the analysis flag. In addition, a user will be able to find out why a particular record was excluded from the analysis file.

2.3 Examination of Financial Fields

For 2007 Prescription Drug data base development, SSS will pay special attention to the reported billed charge and payment. For prescription drugs, a billed charge is the retail price of the drug including ingredient cost, dispensing fee, tax, and administrative expenditures, and a payment is the combined amount of the bill paid by the patient and the insurer. In general, the price or payment per unit of one prescription drug should not have wide variations both within one payer and across payers. During the edits, we will detect outliers or extreme billed charge or payment values. Univariate statistics will be generated to flag values that greatly deviate from the mean. These statistics will be generated for each drug (NDC). We will compute z-scores or z-standardized scores of the billed charge values. If the value falls out of the threshold range, we will flag it for further analysis. We will set the threshold range -2.3 to 2.3. Therefore, all records with z-scores smaller than -2.3 or larger than 2.3 will be flagged as outliers. We will contact payers with a large number of outliers to ensure that there is no coding error. In addition, we will flag records with payment greater than $10,000 as outlier and they will be excluded from the analysis file.

2.4 Examination of the Link between Pharmacy Data and Provider Directories Containing Specialty Information

Starting with the 2001 data submission, payers are required to include the DEA number instead of the practitioner ID. In addition, payers were required to add the DEA number to the Provider file to allow linkage between Pharmacy and Provider data. This linkage is necessary to capture specialty information available in the Provider file. The success rate for linking the 2007 Pharmacy data with the Provider file containing the practitioner specialty information depends on the care that payers took to include this information in both Pharmacy and Provider file. In some cases, the DEA number is missing or the provider ID or Federal Tax ID is provided instead of DEA number. In other cases, the DEA number is present in the Pharmacy file but there is no corresponding information in the Provider file. Table 4 shows the availability of DEA information in both Pharmacy and Provider files for 2007.

Table 4. Contents of DEA Field in the 2007 Pharmacy and Provider Files

Payer	Contents of Provider DEA Field	Contents of Pharmacy DEA Field
P020 - Aetna Life & Health Insurance Co.	DEA	DEA
P030 - Aetna U.S. Healthcare	DEA	DEA
P070 - American Republic Insurance Co.	DEA	DEA
P130 - CareFirst BlueChoice, Inc.	BLANK	DEA
P131 - CareFirst of MD, Inc.	BLANK	DEA
P160 - CIGNA Healthcare Mid-Atlantic, Inc.	DEA	DEA
P280 – Assurant/Fortis Benefits Insurance Co.	BLANK	DEA
P320 - Golden Rule Insurance Co.	BLANK	DEA
P325 - Graphic Arts Benefit Corporation	BLANK	BLANK
P330 - Great-West Life & Annuity Insurance Co.	DEA	DEA
P350 - Guardian Life Insurance Co. of America	DEA	DEA
P471 - Unicare Life & Health Insurance Co.	BLANK	DEA
P480 - Kaiser Foundation Health Plan of Mid-Atlantic	PROVID	PROVID
P500 - MAMSI Life and Health Insurance Co.	DEA	DEA
P510 - Maryland Fidelity Insurance Co.	DEA	DEA
P520 - MD-Individual Practice Association, Inc.	DEA	DEA
P530 - MEGA Life & Health Insurance Co.	BLANK	DEA
P620 - Optimum Choice, Inc	DEA	DEA
P680 - Coventry Healthcare of Delaware, Inc	DEA	DEA
P760 - State Farm Mutual Automobile Insurance Co.	BLANK	DEA
P820 - United Healthcare Insurance Co.	DEA	DEA
P830 - Trustmark Insurance Co.	BLANK	DEA
P850 - Union Labor Life Insurance Co.	DEA	DEA
P870 - United Healthcare of the Mid-Atlantic, Inc.	DEA	DEA

As stated above, Prescription Drug to Provider linkage is performed using DEA number. This is a complicated step because of the following two factors: (1) the DEA number is often missing on the Provider file, and (2) the DEA number is sometimes replaced by the Federal Tax ID or provider ID on the Pharmacy file.

To optimize the link between the files and ensure that the Pharmacy file is linked to the same file as the Encounter file, a master provider directory will be created. During the link, a flag will be created to identify links by DEA Number, Practitioner ID, or Federal Tax ID.

2.5 Examination of the Link between Pharmacy and Encounter Data

Payers are required to submit an Encounter and Pharmacy file that can be linked to by patient. A patient is represented in the database as the combination of three fields: patient ID, birth date, and gender. This is the key that will be used in the linkage. In previous years, the linkage rate between the Pharmacy and the Encounter data was very low. Payers have been requested to ensure that patient IDs are encrypted the same way in both the Pharmacy and the Encounter files and that they do link. The issue of linkage between the Pharmacy and the Encounter data will be re-emphasized this year. Any payer with a low linkage rate has been contacted for further explanation or resubmission if necessary. As stated, in the process of linking the Encounter and the Pharmacy files, two fields will be added from the Encounter to the Pharmacy file: coverage type and delivery systems.

2.6 Final Data Edits and Record Deletions

During the process of data base development, a number of records that need special processing will be identified. Payers will be contacted to decide the remedy for certain errors found in their submission. They will be allowed to resubmit the entire file if needed or to provide a logic in writing by which SSS can correct the file in-house. The logic may involve recoding certain fields or deleting certain records. In either case, SSS will document the problem and the remedy in the final documentation. With approval of MHCC and payers SSS will also delete or flag certain records that compromise the quality of the data base. For example, in past years, SSS has deleted any record with a fill date that falls outside the reporting period. In addition, if there are doubts of quality for a whole file provided by a payer, the entire submission might be excluded with MHCC approval. For example, all records submitted by Mega Life (P530) were excluded from the data base in 2002.

2.7 Creation of Prescription Drug Analysis Files

One or more Prescription Drug analysis files will be created from the master Prescription Drug file. The analysis file will be used to generate tables to be included in the prescription drug reports and spotlights. Based on previous year's experience, the following 11 criteria will be used to screen out records from the analysis file (these criteria will be revised as needed by each report):

1. Exclude records not filled in current year (2007).
2. Exclude records for Non-Maryland patients. If a patient is associated with at least one Maryland ZIP Code, the patient is considered a Maryland resident.
3. Exclude records with all financial variables missing or zero.
4. Exclude debit/credit record pairs - either two claims with same NDC code, same fill date, equal dollar amounts (one positive, one negative) or partial debit/credit pairs.
5. Exclude records in duplicate sets where at least one of the bills is negative.
6. Exclude remaining records with negative payment.

7. Exclude outlier records (claims with total payment > $10,000).
8. Exclude records with invalid NDC codes (blank, 0s, and 9s).
9. Exclude records with invalid patient IDs (blank, 0s, and 9s).
10. Exclude records for patients that are 65 years old and older. Some analyses may include patients over 65 years old.
11. Exclude records of patients covered by Medicare plans (Medicare Supplemental and Medicare + Choice). Some analyses may include patients covered by Medicare plans.

2.8 Creation of Prescription Drug Patient-level File

This year, in addition to the full Prescription Drugdata base file and the analysis file, SSS will create and deliver the 2007 patient-level file to MHCC. MHCC has requested creation of patient-level file because a variety of analyses and reports in recent years were performed at the patient–level. In consultation with MHCC, we will create a number of variables pertaining to each patient. A patient is defined by a combination of patient ID, date of birth and sex (PIDBDG). The patient-level file will include data elements such as demographic variables (age, sex, county and region of residence), number of prescription drugs filled, total payment, total patient liability, coverage type, and a flag indicating that the patient has at least one service in the Encounter database. Additional elements will be proposed and added upon the approval of MHCC. The patient-level file will be created using the same global screens as the analysis file discussed under Section 2.7); unless changes are identified by MHCC. Appendix C-2 contains an alphabetic list of variables to be included in the prescription drug patient-level file.

2.9 Documentation of Errors and Omissions

The improvement of next year's data base has its foundation in this year's data base development. All issues, errors, omissions, corrections, and data submission manual misinterpretation will be documented and submitted to each payer at the end of the data base development effort. From past year's experience, this feedback has been instrumental in improving the quality of the data base. As in prior years, for the 2007 Pharmacy data base, we will compile data quality reports for each payer to be used for the 2008 data submission improvement.

3. Medicare File

The private payer data base will be supplemented by the CMS Medicare data for Maryland residents. SSS will extract relevant information from the CMS Medicare Carrier claims file as soon as that file is delivered to SSS. SSS has already reviewed and enhanced existing software to extract only Maryland recipients and remove selected services, such those for routine dental care, that do not meet MCDB data collection criteria. Only selected variables compatible with the private-payer data will be extracted. Also, we have updated the Medicare file development software module as needed to ensure consistency between Medicare provider specialty codes and the MCDB provider specialty coding scheme. The Medicare file will have a structure almost identical to the private payer data base for easy use in the analyses. SSS' extract will be consistent with the MCDB private payer medical service data regarding the contents and presentation of the variables.

4. Security and Data Confidentiality

This section addresses security considerations with regard to data collection, including procedures to protect data confidentiality, standards for receiving and sending data, data storage, disaster recovery, encryption of the patient identifier, and the physical security of facilities and equipment used in data collection. Our approach conforms to Maryland's "Computerized Record System Security Requirements" and "HIPAA Information Technology Security Standards."

SSS shares the Commission's concern for data quality and the security of the data collection. The use of medical data in a research environment must be safeguarded using both automated and managerial controls. Health care providers, third-party payers, and the Government (including those that contract with the Government) have a clear responsibility to protect the confidentiality of patient medical information. Disclosure of confidential information is damaging regardless of whether it is read from a paper medical record or viewed on a computer monitor.

Balanced with the patient's right to confidentiality is the Government's need and responsibility to have some level of access to medical data to set rates, track changes in provider charges, and study the change of the health care system over time. This balance between legitimate research and patient privacy must be respected, and reasonable controls must be implemented by institutions that acknowledge and respect these two different needs.

When new data files arrive at SSS, we routinely strip off identifying information (e.g., Social Security Number, name, address, and phone number). For example, when we upload CMS Medicare data, we immediately extract only the fields used in this project that are similar to those in the MCDB. When information is needed from these control files for a particular analysis, programmers are required to link to these files only temporarily and not to save these fields on the resulting analytic file. SSS also understands that confidentiality and disclosure avoidance extend beyond simply encrypting identifiers or dropping identifying information to other, more subtle areas, such as cell sizes in output reports. This is of special concern for rare diseases or areas of the State with a small population base. For example, if the insurance premiums per capita are displayed by county, and it is known that only one insurance company provides insurance in that county, it is possible for readers to identify the insurance company.

4.1 Standards for Receiving and Sending Data

Data are received on a variety of different media types. Media are delivered directly to the project director or data base managers by an SSS courier. Media are immediately cataloged and placed in the Maryland Project Data Center (MPDC), which is secured by cipher locks and located in a secure, locked office suite.

4.2 Data Storage

By using the Windows 2000 Active Directory, access to sensitive data is controlled through permissions based on user authority. User IDs are created for each member of the MPDC staff, and IDs are not shared among staff. Password polices are set in an Active Directory-based group

policy, which includes complex password restrictions, size limits, and reuse prohibitions. Staff is compelled to change passwords every 45 days by the group policy.

Once received in the MPDC, data are stored only on the original media or on one of the secured MPDC systems for processing. The original media are placed in the MPDC and are not removed until they have been prepared for return to MHCC. At all times, media are located in the MPDC until SSS is ready to deliver the media to MHCC. At that point, a special courier pickup is arranged in a joint effort with MHCC. Both SSS and MHCC will check the completeness of the deliverable packages.

4.3 Disaster Recovery

At the time of the initial installation of the PC operating system and standard software, an image of each workstation is created using Altiris, SSS' desktop management software. The retained image serves as a mechanism for quickly reconfiguring the workstations in the event of failure. To protect confidentiality and adhere to the security requirements, the Altiris backups will occur prior to the introduction of data.

The raw data will be retained in the format in which they were first received and stored in a strictly controlled locked room remote to the server. Additionally, other files necessary to rebuild the systems will be backed up to SDLT 320 cartridges and retained in the remote storage facility.

In the event of a system failure, a replacement system will be acquired and quickly rebuilt with the retained system images. Upon rebuild, any data relevant to the failed system will be restored from tape. In the event of a more catastrophic failure, the replacement systems can quickly be rebuilt from the offsite backups at the remote office, if necessary.

4.4 Encryption of the Patient Identifier

The IDs on the Medical Services and Prescription Drug data bases are encrypted by the payers prior to shipping to the MPDC. SSS will re-encrypt the IDs during the data base development stage.

4.5 Physical Security of the Facilities

All Maryland data processing workstations and printers are secured in the MPDC with a cipher lock. Access to the room is limited to the key Maryland project personnel. The server resides in a separate cipher-locked, climate-controlled room. Both the server and the workstations are attached to a 100Mbs switch accessible only to the MPDC and segregated from SSS' enterprise.

4.6 Equipment Used in Data Collection

The workstations in the MPDC have all been installed with the Windows 2000 Professional Operating System and Windows XP Professional. Each of these systems is configured with the NTFS file system to support assignment of directory- and file-level permissions. Additionally,

each system is a member of a dedicated, standalone Windows 2000 Domain, specifically created and maintained for the MPDC.

The workstations dedicated to MCDB processing include two Pentium 4 3.8 GHz workstations; one Pentium 4, 3.0 Ghz workstation. The MPDC has also dedicated one Pentium 4, 2.4GHz workstation, specifically to SHEA processing and a Pentium 4 3.0 GHz system for Pharmacy processing. The memory of each of these computers was upgraded to 2GB RAM as required by the increasing number of records to process. A Pentium 4 2.26 GHz workstation is used for in-processing functions. Attached to the in-processing workstation is an HP SureStore DAT8, an Exabyte EL820E, and a QualStar/Fujitsu 3490E tape drive, allowing for restoration of data from diverse sources to be used in the project.

SSS uses a Dell PowerEdge 600SC 1.8Ghz server running Windows 2000 Server for data storage, authentication services, and data backups. It has a formatted storage capacity of 756 GB. Attached to the PowerEdge server is a Quantum SDLT 320 Tape Drive supporting the SDLT 320 tape format. As noted, Windows 2000 Active Directory is used for authentication and access control. Through the default group policy, password restrictions and lockout settings are enforced as specified in Maryland's "Computerized Record System Security Requirements" and "HIPAA Information Technology Security Standards."

An HP LaserJet 4200 DTN is installed in the MPDC for dedicated support of report processing and other hardcopy deliverables. A shredder is also located in the MPDC for immediate shredding of confidential materials.

Appendix A – Insurance Companies

List of 2007 Insurance Companies

P020 - Aetna Life & Health Insurance Co.
P030 - Aetna U.S. Healthcare
P070 - American Republic Insurance Co.
P130 - CareFirst BlueChoice, Inc.
P131 - CareFirst of MD, Inc.
P160 - CIGNA Healthcare Mid-Atlantic, Inc.
P280 - Time Insurance Co. (Assurant Health)
P320 - Golden Rule Insurance Co.
P325 - Graphic Arts Benefit Corporation
P330 - Great-West Life & Annuity Insurance Co.
P350 - Guardian Life Insurance Co. of America
P471 - Unicare Life & Health Insurance Co.
P480 - Kaiser Permanente Health Plan of Mid-Atlantic
P500 - MAMSI Life and Health Insurance Co.
P520 - MD-Individual Practice Association, Inc.
P530 - MEGA Life & Health Insurance Co.
P620 - Optimum Choice, Inc
P680 - Coventry Healthcare of Delaware, Inc
P760 - State Farm Mutual Automobile Insurance Co.
P820 - United Healthcare Insurance Co.
P830 - Trustmark Insurance Co.
P850 - Union Labor Life Insurance Co.
P870 - United Healthcare of the Mid-Atlantic, Inc.

Appendix B – Encounter Service-Level and Patient-Level Files
Alphabetic List of Variables to Be Created

Appendix B-1 Encounter Service-Level File
List of Variables

Field Name	Description
AGE	Patient Age at Service
AGE1207_NR	Non-Rounded Patient Age as of 12/31/2007
ALLOW	Allowed Amount-AA ($)
BEGINDT	Service From Date
BETOSAGG	BETOS Category, Aggregated
BETOSDET	BETOS Category, Detailed
BILL	Billed Charge-BC ($)
BILLTYPE	Type of Bill
CDHPIND	Consumer Directed Health Plan
CLAIMCN	Claim Control Number
CLMPDATE	Claim Paid Date
CLMRELCO	Claim Related Condition
CNTY_P2	County to Use for Pract. Report Analysis
COUNTY_P	Patient County of Residence-FIPS Code
COVOTH_I	Imputed/Converted COVOTHR
COVOTHR	Patient Covered by Other Insurance
COVTYPE	Coverage Type
CPT	CPT-4 /HCPCS Procedure Code
D_DAT_F	Delete Flag - Services with Date Out of Range
D_DNT_F	Delete Flag - Routine Dental Services
D_I7K_F	Delete Flag - Financial Outliers
D_INP_F	Delete Flag - Inpatient Services
D_ZIP_F	Delete Flag - Non-Maryland Residents Services
DELIVTYP	Delivery System Type
DISENROLL_P	Disenrollment Date at PIDBDG Level, SSS created
DISENROLLDT	Disenrollment Date
DX1	ICD-9-CM Diagnosis Code 1
DX10	ICD-9-CM Diagnosis Code 10
DX2	ICD-9-CM Diagnosis Code 2
DX3	ICD-9-CM Diagnosis Code 3
DX4	ICD-9-CM Diagnosis Code 4
DX5	ICD-9-CM Diagnosis Code 5
DX6	ICD-9-CM Diagnosis Code 6
DX7	ICD-9-CM Diagnosis Code 7
DX8	ICD-9-CM Diagnosis Code 8
DX9	ICD-9-CM Diagnosis Code 9
ENCNT_ID	Medical Service ID (Payer Specific)
ENDDT	Service Thru Date
ENROLL_P	Enrollment Date at PIDBDG Level, SSS created
ENROLLDT	Enrollment Date
F_AGE_NR	Valid Age Flag(Age1207_nr 0-110 incl) (1/0)
F_ANESTH	Flag, Anesthesia Service
F_BENRULE	Bens Rule for Capitation
F_CAP	Capitated Service (1/0)

Field Name	Description
F_CAP_A	Capit. Service used in Analysis (1/0)
F_CPT	Procedure Code Category
F_DEMOG	Demographic Donor for Analysis File?
F_FAC	Service Performed in a Facility? (1/0)
F_FINMS	All finan. var. are zero or missing
F_IMPOTH	Is Variable COVOTHR Imputed? (1/0)
F_IMPRVU	RVU Imputation Flag (1/0,2)
F_INSAMP	Service in 10% Sample?
F_MODF	1=There is TC/SG in MODF1/MODF2
F_NCAP_A	Non-Capit Service used in Analysis (1/0)
F_ODDSVC	Odd Service Flag
F_PATID	Flag for Valid PATID (1/0)
F_PAYMD	Payment:1=negative, 2=0, 3=+, 4=missing
F_UNCV	Uncovered services(1/0)
F_YR07	Service provided in 2007+
FACILITY	Service Location is a Facility (1/0)
FEDTAXID	Practitioner Federal Tax ID
FILE_ID	Payer Unique Input File ID
ID_CHANGE	PIDBDG changed using data from legacy file
INSTATE	MD Service Location ZIP
LOS	Length of Service
MOD1	AMA Modified I
MOD2	AMA Modified II
NEWBETAG	Aggregated BETOS, Reclassified
NEWBETDT	Detailed BETOS, Reclassified
NEWMOD	Imputed Modifier/Last Imputation
NEWSPEC	Revised Specialty Code for Complex Algorithm
NPI	NPI Number
NPISPEC	Revised Specialty Code based on NPI
NUMDXC	Number of Diagnosis Codes, Calculated
PARTPROV	Participating Provider Flag
PATID	Scrambled PATID
PATLIAB	Patient Liability-PL ($)
PAY_CALC	Method for Calculating Medicare Payment
PAY_MCR	Prelim Calc MCR Rate-DO NOT USE AT THIS POINT
PAYERTYP	Payer Type(1=PRVHMO 2=PRVNHMO 3=MCRHMO 9=CAP)
PAYMENT	Payment=Sum(RA,PL)($)
PIDBDG	Recipient ID Number
PLAN	Plan Type(HMOFFS/NONHMO/HMOCAP)
PLAN2	Plan Type (HMOFFS/NONHMO/HMOCAP/MCRALL), All Ages
PNUM	Payer Unique ID
POS	Simplified Place of Service Code
PROVID	Servicing Practitioner Identifier
REGION_P	Patient Region of Residence
REIMB	Reimbursement Amount-RA ($)
RVU	Assigned RVU
RVU_2007	2007 RVU applied to 2007 file

Field Name	Description
RVU_I	Assigned/Imputed RVU
RVU_MP	Medicare phys fee schedule RVU, malpractice
RVU_PE	Medicare Phys Fee Schedule RVU, Pract Expense
RVU_W	Medicare Phys Fee Schedule RVU, Work component
SEX	Patient Sex
SPEC_SOURCE	Source of NEWSPEC specialty codes
SPEC1	Practitioner Specialty 1
SVCPLACE	Place of Service
UNITIND	Service Unit Indicator
UNITS	Number of Units for a Service
TAXONOMY	NPI Taxonomy Code
ZIP_P	Patient Residence ZIP Code
ZIP_S	Service Location ZIP Code

Appendix B-2: Encounter Patient-Level File
List of Variables

Field Name	Description
AGE1207_NR	Non-Rounded Patient Age as of 12/31/2007
CDHPIND	CDHP Indicator
CNTY_P2	County to Use for Practitionner Report Analysis
CONCPRED	Risk Score
COVTYPE	Coverage Type
DISENROLL_P	Disenrollment Date at PIDBDG Level
ENROLL_P	Enrollment Date at PIDBDG Level
F_EDSTAY	Flag, Patient has one or more ED visit
F_FULLYEAR	Flag, Patient is full-year enrollee
F_INSTAY	Flag, Patient has one or more inpatient visit
F_OPDVISIT	Flag, Patient has one or more OPD visit
F_RXLINK	Flag, Patient can be linked to the RX file
HEAL_ST	Flag, Health Status
HMOCAP_numserv	HMOCAP, Number of Service
HMOCAP_par_pay	HMOCAP, Participating Payment
HMOCAP_par_rvu07	HMOCAP, Participating RVU - 2007
HMOCAP_totpaymcr	HMOCAP, Calculated Medicare Rate
HMOFFS_npar_patl	HMOFFS, Non-Participating Patient Liability
HMOFFS_npar_pay	HMOFFS, Non-participating Payment
HMOFFS_npar_rvu07	HMOFFS, Non-participating RVU - 2007
HMOFFS_numserv	HMOFFS, Number of Service
HMOFFS_par_patl	HMOFFS, Participating Patient Liability
HMOFFS_par_pay	HMOFFS, Participating Payment
HMOFFS_par_rvu07	HMOFFS, Participating RVU - 2007
HMOFFS_totchg	HMOFFS, Total: Bill Charge
HMOFFS_totpatl	HMOFFS, Total: Patient Liability
HMOFFS_totpay	HMOFFS, Total: Payment
HMOFFS_totpaymcr	HMOFFS, Total: Calculated Medicare Rate
HMOFFS_totrvu07	HMOFFS, Total: RVU - 2007
NONHMO_npar_patl	NONHMO, Non-Participating Patient Liability
NONHMO_npar_pay	NONHMO, Non-participating Payment
NONHMO_npar_rvu07	NONHMO, Non-participating RVU - 2007
NONHMO_numserv	NONHMO, Number of Service
NONHMO_par_patl	NONHMO, Participating Patient Liability
NONHMO_par_pay	NONHMO, Participating Payment
NONHMO_par_rvu07	NONHMO, Participating RVU - 2007
NONHMO_totchg	NONHMO, Total: Bill Charge
NONHMO_totpatl	NONHMO, Total: Patient Liability
NONHMO_totpay	NONHMO, Total: Payment
NONHMO_totpaymcr	NONHMO, Total: Calculated Medicare Rate
NONHMO_totrvu07	NONHMO, Total: RVU - 2007
PIDBDG	Recipient ID Number
PNUM	Payer Unique ID
REGION_P	Patient Region of Residence
SEX	Patient Sex

Appendix C – Pharmacy Service-Level and Patient-Level Files
Alphabetic List of Variables to Be Created

Appendix C-1 Pharmacy Service-Level File
List of Variables

Field Name	Description
APPRDATE	Drug Approval Date
CHIND	Chain Indicator
DRUG_ID	Multum Drug ID
FILLDATE	Created at MHCC's Request from Month, Day, and Year Fields
GBO	Generic/Brand Indicator
MMDC	Main Multum Drug Code – From Multum Lexicon
MULTDC1	Multum Drug Category 1
MULTDC2	Multum Drug Clategory 2
MULTDC3	Multum Drug Category 3
MULTDC4	Multum Drug Category 4
NDCLABL	National Drug Labeler-Product Code
NDCPACK	National Drug Package Code
PIDBDG	Unique Patient ID (PNUM/PATID/BRTHYR/BRTHMO/GENDER)
PNUM	Unique Payer Number
RAGE	Patient Age at Service
RAGE1207	Patient Age at 12/31/2007
RF_10K	Flag for payment>10K
RF_ANAL	Analysis File record Indicator
RF_COV17	Medicare Coverage Flag
RF_DBC	Flag identifying suspect debit/credit records
RF_DEA	DEANUM(1-Valid, 0-Other, 2-Blank)
RF_ELINK	Pharmacy/Encounter Link Flag
RF_FINMS	Flag Identifying Records with all Financial Fields = 0 or missing
RF_MD	MD Patient Residency indicator
RF_MEDSUP	Medical Supply Indicator
RF_MOANAL	Mail Order AnalysisFfile record Indicator
RF_MORDER	Mail Order Flag
RF_NDC	NDC Flag
RF_NDRUG	New Drug Flag
RF_NDUP	Duplicate set with at least one negative bill
RF_PATID	Patient ID Validation Flag
RF_PAYMD	Flag for Payment Category
RF_PLINK	Pharmacy/Provider Link Flag
RF_SELF	Self-Insurance Coverage Indicator
RF_YR08	Flag Identifying Records for Claims in 2008
RF_YR65	Age 65+ Flag
RMSCAT	Medical Supply Category
RN_ZIP_S	Adjusted Pharmacy ZIP code (Using NACDS data)
RPAYMENT	Calculated Payment (patient liability + reimbursement amount)
RPHARMCTY	Pharmacy County

Field Name	Description
RPHARMGRP	Pharmacy Group
RSCRIPT	Number of Adjusted or 30-day Script
RXNumber	Prescription Drug Number
R_NAGE1207	Patient Age as of 12/31/2007 (Not Rounded)

Appendix C-2: Pharmacy Patient-Level File
List of Variables

Field Name	Description
AGE1207_NR	Patient Age as of 12/31/2007(Not rounded)
BRAND_NUMSERV	Branded Drugs, Number of Prescriptions
BRAND_TOTCHG	Branded Drugs, Billed Charge
BRAND_TOTPATL	Branded Drugs, Patient Liability
BRAND_TOTPAY	Branded Drugs, Payment
BRAND_TOTREIMB	Branded Drugs, Reimbursement Amount
CNTY_P	Patient County of Residence
COVTYPE	Coverage Type
DELIVTYP	Delivery Type
DISENROLL_P	Patient Disenrollment Date (mm/dd/yyyy)
ENROLL_P	Patient Enrollment Date (mm/dd/yyyy)
GENERIC_NUMSERV	Generic Drugs, Number of Prescriptions
GENERIC_TOTCHG	Generic Drugs, Bill Charge
GENERIC_TOTPATL	Generic Drugs, Patient Liability
GENERIC_TOTPAY	Generic Drugs, Payment
GENERIC_TOTREIMB	Generic Drugs, Reimbursement Amount
PIDBDG	Recipient ID Number
PNUM	Payer Unique ID
REGION_P	Patient Region of Residence
RF_ENCLINK	Pharmacy/Encounter Link Flag
SEX	Patient Sex
UNKTYPE_NUMSERV	Unknown Drug Type, Number of Prescriptions
UNKTYPE_TOTCHG	Unknown Drug Type, Bill Charge
UNKTYPE_TOTPATL	Unknown Drug Type, Patient Liability
UNKTYPE_TOTPAY	Unknown Drug Type, Payment
UNKTYPE_TOTREIMB	Unknown Drug Type, Reimbursement Amount